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Jameco Part Number 218616 (NLP65-9608)

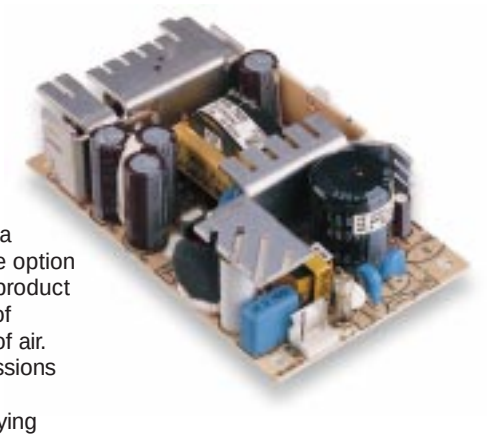
NLP65 Series

Single, dual and triple output

ARTESYN TECHNOLOGIES

LOW TO MEDIUM POWER AC/DC POWER SUPPLIES | 65-75W AC/DC Universal Input Switch Mode Power Supplies | 1

- **5.0 x 3.0 inch card and 1.26 inch package (1U applications)**
- **Smallest industry standard package**
- **EN61000-3-2 compliance option (HCC)**
- **Overvoltage and short circuit protection**
- **65W with free air convection cooling**
- **EN55022, EN55011 conducted emissions level B**
- **EN61000-4-2,-3,-4, -5, -6 immunity compliant**
- **Enclosure and cover kit options**



The NLP65 series is a 65W universal input AC/DC power supply on a 5 x 3 inch card with a maximum component height of 1.26 inches for use in 1U applications. Each model has the option of input harmonic current correction in the same package size making the series ideal for product designs that will need to comply with EN61000-3-2 legislation. The NLP65 provides 65W of output power with free air convection cooling which can be boosted to 75W with 20CFM of air. The NLP65, with full international safety approval and the CE mark, meets conducted emissions EN55022 level B and has immunity compliance to EN61000-4-2,-3,-4, -5, -6. The series is available in a factory installed enclosure with an IEC connector and output connector on flying leads plus a cover kit for self-installation is also available as an accessory. The NLP65 series is designed for use in low power data networking, computer and telecom applications such as hubs, routers, POS terminals, internet servers, cable modems and PABX's. This list is not exclusive as the generic feature set of the NLP65 series with industry standard output configurations provides a solution for most low power applications including many industrial applications.

CE (LVD)

2 YEAR WARRANTY

All specifications are typical at nominal input, full load at 25°C unless otherwise stated

SPECIFICATIONS

OUTPUT SPECIFICATIONS

Total regulation (Line and load)	Main output Auxiliary outputs	±2.0% ±5.0%
Rise time	At turn-on	1.0s, max.
Transient response	Main output 25% step at 0.1A/µs	5.0% or 250mV max. dev., 1ms max. recovery to 1%
Temperature coefficient		±0.02%/°C
Overvoltage protection	Main outputs	125%, ±10%
Short circuit protection	Cyclic operation	Continuous
Minimum output current	Single and multiple	(See Note 6)

INPUT SPECIFICATIONS

Input voltage range	Universal input, (See Note 2)	85 to 264VAC
	NLP65-76xx version only	120 to 370VDC
Input frequency range		47Hz to 63Hz
Input surge current (cold start)	120VAC 230VAC	17A max. 32A max.
Safety ground leakage current	120VAC, 60Hz 230VAC, 50Hz	0.7mA 1.4mA
Input current	120VAC, with PFC 230VAC, with PFC 120VAC, without PFC 230VAC, without PFC	1.05A rms 0.51A rms 1.40A rms 0.80A rms
Input fuse	UL/IEC127	250VAC S 3.15A

EMC CHARACTERISTICS (11,12)

Conducted emissions	EN55022, FCC part 15	Level B
Radiated emissions	EN55022, FCC part 15	Level A
ESD air	EN61000-4-2, level 3	Perf. criteria 1
ESD contact	EN61000-4-2, level 4	Perf. criteria 1

EMC CHARACTERISTICS (continued) (11,12)

Surge	EN61000-4-5, level 3	Perf. criteria 1
Fast transients	EN61000-4-4, level 3	Perf. criteria 1
Radiated immunity	EN61000-4-3, level 3	Perf. criteria 2
Conducted immunity	EN61000-4-6, level 3	Perf. criteria 2

GENERAL SPECIFICATIONS

Hold-up time	120VAC, 60Hz 230VAC, 50Hz	16ms @ 65W 78ms @ 65W
Efficiency	120VAC, 65W	72% typical
Isolation voltage	Input/output Input/chassis	3000VAC 1500VAC
Switching frequency	Fixed	100kHz, ±5kHz
Approvals and standards (See Notes 9, 13)		EN60950, VDE0805 IEC950, UL1950, BABT CSA C22.2 No. 950
Weight		283g (10 oz)
MTBF	MIL-HDBK-217F	150,000 hours min.

GENERAL SPECIFICATIONS

Thermal performance (See Notes 1, 3, 10)	Operating ambient, (See derating curve)	0°C to +70°C
	Non-operating	-40°C to +85°C
	50°C to 70°C ambient, convection cooled	Derate to 50% load
	0°C to 50°C, ambient, convection cooled	65W
	0°C to 50°C ambient, 20CFM forced air (See Note 10)	75W
	Peak (0°C to +50°C, 60s)	See table
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non-operating	10,000 feet max. 30,000 feet max.
Vibration (See Note 5)	5Hz to 500Hz	2.4G rms peak
Shock	per MIL-STD-810E	516.4 Part IV

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OUTPUT VOLTAGE	OUTPUT CURRENT MAX (1)	PEAK (3)	FAN (10)	RIPPLE (4)	TOTAL REGULATION (6)	NON-HARMONIC CORRECTED	HARMONIC CORRECTED	GROUND PIN (12, 14)
+5V (I_A)	7.5A	9.1A	8.0A	50mV	±2.0%	NLP65-7608	NLP65-9608	NLP65-X608G
+12V (I_B)	2.5A	3.3A	3.0A	150mV	±5.0%			
–12V	0.65A	0.81A	0.8A	120mV	±5.0%			
+5V (I_A)	7.5A	9.1A	8.0A	50mV	±2.0%	NLP65-7610	NLP65-9610	NLP65-X610G
+15V (I_B)	2.2A	2.9A	2.5A	150mV	±5.0%			
–15V	0.65A	0.85A	0.8A	150mV	±5.0%			
+5V (I_A)	7.0A	9.1A	8.0A	50mV	±2.0%	NLP65-7620	NLP65-9620	NLP65-X620G
+24V (I_B)	2.0A	2.6A	2.0A	240mV	±5.0%			
+5V (I_A)	7.0A	9.1A	8.0A	50mV	±2.0%	NLP65-7629	NLP65-9629	NLP65-X629G
+12V (I_B)	2.5A	3.3A	3.0A	150mV	±5.0%			
+5V	10.0A	13.0A	12.0A	50mV	±2.0%	NLP65-7605	NLP65-9605	NLP65-X605G
+12V	5.4A	7.0A	6.5A	120mV	±2.0%	NLP65-7612	NLP65-9612	NLP65-X612G
+15V	4.4A	5.7A	5.3A	150mV	±2.0%	NLP65-7615	NLP65-9615	NLP65-X615G
+24V	2.7A	3.5A	3.5A	240mV	±2.0%	NLP65-7624	NLP65-9624	NLP65-X624G

Notes

1. Natural convection cooling. Models NLP65-X629, NLP65-X608, NLP65-X610 must not exceed 62.5 Watts continuous output power with natural convection. Model NLP65-X620 not to exceed 65 Watts continuous output power with natural convection. Model NLP65-763V3 must not exceed 33 Watts continuous output power.
2. When the input voltage is less than 90VAC the operating temperature range is 0°C to +40°C. The ripple and regulation specifications may not be met.
3. Peak output current lasting less than 60 seconds with duty cycle less than 5%. During peak loading, output voltage may exceed total regulation limits.
4. Figure is peak-to-peak for convection power rating. Output noise measurements are made across a 20MHz bandwidth using a 6 inch twisted pair, terminated with a 10µF electrolytic capacitor and a 0.1µF ceramic capacitor.
5. Three orthogonal axes, random vibration 10 minutes for each axes, 2.4G rms 5Hz to 500Hz.
6. A minimum load on the main output is required for proper start up. For multiple outputs and single +5V output, the minimum load on the +5V is 0.2A. For single outputs greater than +5V the minimum load is 0.1A. To maintain stated regulation then:
   for single output units
   $I \geq 0.2A$
   for multiple output units
   $0.25 \leq I(A)/I(B) \leq 5$, for $I(A) \geq 0.2A$.
7. For optimum reliability, no part of the heatsink should exceed 120°C, and no semiconductor case temperature should exceed 130°C.
8. CAUTION: Allow a minimum of 1 second after disconnecting line power when making thermal measurements.
9. This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
10. Maximum continuous output power for all multiple output models must not exceed 75 Watts with 20CFM forced air cooling.
11. Conducted and radiated emissions testing were performed using the standard EN55022 set-up with a stand alone NLP65 unit placed on a grounded metal plate with a line choke on the AC input and ground wires (i.e. the wires are looped through an EMI suppression toroid).
    For system compliance it is usually necessary to install an 'off-the-shelf' AC inlet with an integral line filter in the system chassis or to install a line choke on the input wires as close as possible to AC entry point of the system chasssis. Please contact the applications group at Artesyn for assistance with EMI compliance.
12. The NLP65 units with the suffix 'G' is the ground pin and ground choke option. J2, L6 and JP10 are included. J2 is a safety agency approved grounding pin, L6 is a ground choke and JP10 is a jumper. This option is intended for use in non-metallic chassis applications where grounding is not possible via the mounting screws. The ground choke is provided to assist system EMC compliance. When performing conducted emissions testing on stand alone units, the 'G' option is required to meet level B. To order simply add the suffix 'G' to the standard model number, e.g. NLP65-7608G, NLP65-9608G. This option is available for both the PFC and non-PFC versions.
13. All models require a minimum mounting stand-off of 0.25 inches (6.35mm) in the end use product.
14. These standard models are available with an enclosure. To order an enclosed version, see model numbering options below.
15. No PFC version, EN61000-3-2 is not applicable to this model.

International Safety Standard Approvals

VDE0805/EN60950/IEC950 File No. 10401-3336-1096
Licence No. 93678

UL1950 File No. E136005

CSA C22.2 No. 950 File No. LR41062C

Approval No. 606975

Model Numbering Options

1. The enclosure version includes: IEC connector, on/off switch, wire harness output connector and fitted cover. To order, please add the suffix 'E' to the end of the model number, e.g. NLP65-X608E. See NLP65 enclosure for details.
2. A Safety earth ground pin and ground choke are available as an option. To order, please add the suffix 'G' to the end of the model number, e.g. NLP65-X608G.
3. To order a snap-on cover (unfitted), order the part number NLP65C.
4. To order a mounting bracket (unfitted), order the part number NLP65MB.

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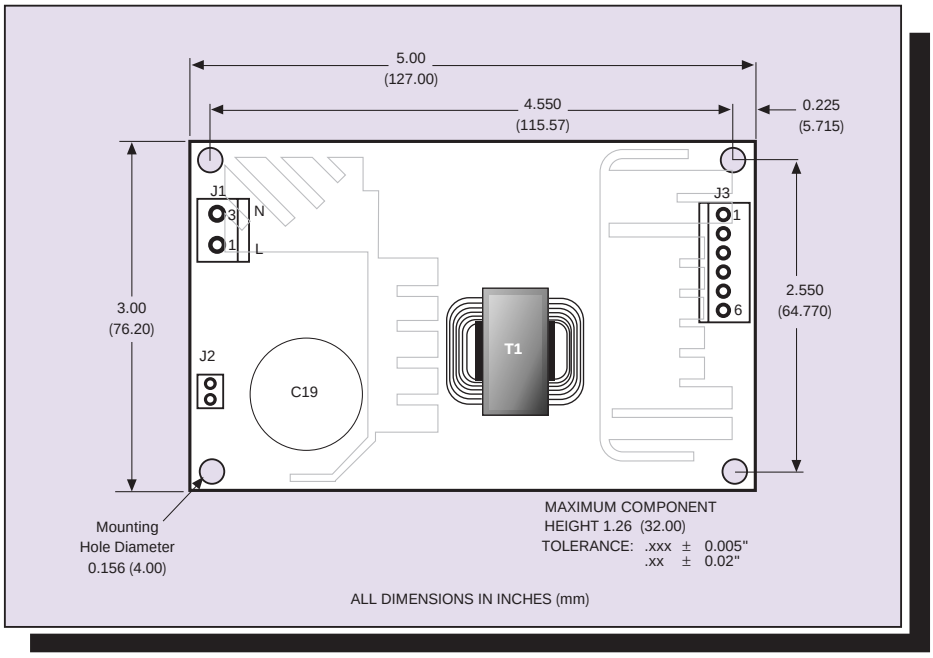
Mechanical Notes

A All dimensions are in inches (mm).



INPUT PIN CONNECTIONS	
J1	
Pin 1	AC Line
Pin 2	No Pin
Pin 3	AC Neutral
J2 (ON 'G' SUFFIX ONLY)	
Pin 1	Safety Ground

OUTPUT PIN CONNECTIONS				
J3	**SINGLE -XX05 ONLY**	**SINGLE**	**DUAL**	**TRIPLE**
Pin 1	V (A)	No Connection	V (B)	V (B)
Pin 2	V (A)	V (A)	V (A)	V (A)
Pin 3	V (A)	V (A)	V (A)	V (A)
Pin 4	Return	Return	Return	Return
Pin 5	Return	Return	Return	Return
Pin 6	Return	No Connection	N/C	V (C)

Input and output connectors

AC (J1) connector type
Molex 26-60-4030 type.

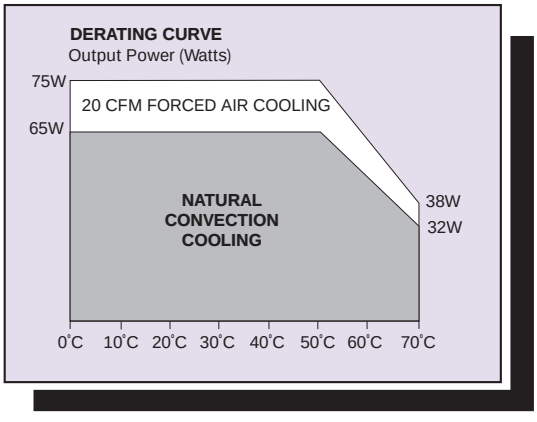
DC (J3) connector type
Molex 26-60-4060 type.

Mating connectors

AC (J1) mating connector type
Molex 09-50-3031 or equivalent with Molex 08-50-0105 or equivalent crimp terminals.

DC (J3) mating connector type
Molex 09-50-3061 with Molex 2478 phosphor bronze crimp terminals or equivalent.

Note: The input and output connectors are the same as those used on NFS40, NFN40, NAL40, NAN40 and NLP40.



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